

Teachers' Self-efficacy Beliefs, Self-Regulation of Learning, and Academic Performance

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Abstract

The present study examined whether the association between teachers' self-efficacy beliefs and academic performance is mediated by their homework's self-efficacy beliefs and use of self-regulatory learning strategies. Path analyses were conducted. The final model revealed that teachers' self-efficacy beliefs have an indirect effect on their academic performance mediated by their sense of efficacy belief regarding their capability to initiate and complete their homework assignments and their use of self-regulatory learning strategies. Implications for teaching preparation programs are discussed.

Teachers' Self-efficacy Beliefs, Self-Regulation of Learning, and Academic Performance

Teachers exert a very important role in our society. It is difficult to imagine our society without effective teachers. Teachers educate children in such a way that these learners could be active agents in the construction of their world and our society. Teachers' tasks, such as enhancing their students' motivation, maintaining effective classroom management, grading, and preparing lesson plans, require teachers' task-focus and enactment of goals. Studies examining teachers' effectiveness suggest that self-regulation is an essential determinant of teachers' efficacy (Dembo, 2001; Randi, 2004). *Self-regulation of learning* refers to the processes that maintain the cognition, motivation, and behavior necessary to achieve intentional goals (Zimmerman, 2000). Further, self-regulation is an essential condition for human success and professional achievement (Zimmerman, 2000). Consequently, effective self-regulated learners are those who set appropriate goals, use effective learning strategies, monitor their academic progress, and self-reflect on their outcomes. Conversely, appropriate execution of self-regulation depends on the individuals' perception of personal agency; that is their sense of self and capability beliefs (Bandura, 1997; Pajares, 1996; Zimmerman, 2000). Although students' self-regulatory processes are now quite investigated, the purpose of the present investigation is to understand teachers' self-regulatory processes while they are working to obtain an advanced professional certification.

Understanding teachers' self-regulatory processes and sense of self is a paramount inquiry if their effects in the classroom would like to be figured out. From the social cognitive perspective (Bandura, 1997), self-regulation encompasses the interaction of the person and the behavior, as well as the environment in a triadic process. In other words, teachers' beliefs and abilities interact with their actions and the ways in which they perceive and relate to their environment. *Teachers' self efficacy* refers to "their beliefs in their ability to have a positive effect on student learning" (Ashton, 1985, p. 142). Recent work in the field of psychology and education has revealed that teachers' self-efficacy beliefs is a significant factor that influences teachers' positive attitude toward helping their students, their level of satisfaction, and their desire to motivate their students (Tschannen-Moran & Woolfolk, 2001).

Teachers' cognitive and behavioral control and their efficacy beliefs are expected to be the foundation of their ability to guide their professional development during and after completion of their initial teaching certification. Consequently, enacting self-regulation and enhancing ones' self-efficacy beliefs during an advanced professional training are essential for attaining those goals. Nevertheless, the predictive and mediating utility of self-regulation of learning and motivation among students are well established (Zimmerman, 2000; Zimmerman & Bandura, 1994). However, these mediating effects have not been fully examined among teachers. Thus, the purpose of the present study was to examine how the association between teachers' self-efficacy beliefs and academic performance is mediated by their homework' self-efficacy beliefs and use of self-regulatory learning strategies.

According to Bembenutty and Chen (2005), the focus on the investigation of teachers effectiveness has shifted from examinations pinpointing teachers' knowledge of their content area, development of lesson plans, and classroom management skills, to an examination centered on teachers' beliefs and self-regulatory skills necessary for teaching and learning (Dembo, 2001; Randi, 2004). Previous conventional notions of teaching

effectiveness placed the focus on their skills to learn how to teach. However, recent notions from a social cognitive perspective view teachers as self-regulated agents who could activate their beliefs and take appropriate actions in order to successfully complete their professional tasks. Accordingly, learning to teach is not enough; rather, teachers need to learn how to learn (Dembo, 2001). Thus, when teachers are now returning to colleges and universities to acquire an advanced professional certification, they are often presented with tasks that require from them cognitive control, ability to delay gratification, and high self-efficacy beliefs in order to learn (Bembenutty & Chen, 2005). For instance, Randi (2004) proposed that teacher preparation programs should consider integrating to their agenda new curricula in order to facilitate teachers' acquisition of crucial self-regulatory learning strategies.

Self-regulation of Learning

According to Zimmerman (2000), self-regulation of learning is a key factor that impacts learners' motivation to achieve. Likewise, Bandura (1997) proposed that in order to attain vital goals, individuals influence and control their environment. From the social cognitive perspective, all individuals, in some ways, attend to self-regulate their actions and manage their behaviors purposefully to secure attainment of goals (Zimmerman, 2000). Like the students, teachers who are pursuing an advanced certification could engage in self-directed learning processes by using cognitive resources to attain academic achievement. Consistent with Zimmerman's (2000) proposition, what would distinguish effective teachers during their advanced training from non-effective teachers could be how each of them would activate their self-regulatory processes.

In a nutshell, it is proposed here that like regular students, teachers pursuing an advanced degree would need to be afforded the opportunity to develop self-regulation during their training programs (Randi, 2004). On this note, Bembenutty and Chen (2005) posited that a hallmark of the academic success of teachers during their training programs should be their ability to self-regulate learning through goal-setting, strategic planning, self-monitoring of progress, activating positive motivational beliefs, and reflecting on performance outcomes. In other words, a hallmark of teacher' self-regulation of learning is the ability to remain task-focused by protecting task specific intentions from non-task alternatives (Corno, 1989; Zimmerman, 1994). Sustaining task specific intentions involves teachers' foregoing an attractive immediately obtainable goal for the sake of long-term and temporarily distant goals (Bembenutty & Chen, 2005).

Studies have shown that self-regulation of learning is related to academic success and achievement motivation. In a recent study, Bembenutty and Chen (2005) examined the predictive utility of self-regulation of learning, academic delay of gratification, and motivational beliefs of teaching efficacy and academic performance among preservice teachers. The researchers found that preservice teachers' motivational beliefs and self-regulatory tendencies were significantly and positively related. Further, the results revealed that academic self-regulation and academic delay of gratification significantly predicted preservice teachers' self-efficacy beliefs. Academic self-regulation also significantly predicted academic delay of gratification.

Teachers' Self-Efficacy Beliefs

Researchers have posited that teacher efficacy belief is a judgment of their capability to influence desired outcomes related to students' performance, behavior, and motivation in the classroom (Tschannen-Moran & Woolfolk, 2001). Likewise,

Tschannen-Moran, Woolfolk Hoy, & Hoy, 1998) stated that, the teacher's beliefs in his or her capability to organize and execute courses of action required to successfully accomplish a specific teaching task in a particular context" (p. 233). There is evidence that teachers with high sense of efficacy beliefs engage in a high level of planning and organization (Allinder, 1994). Their high self-efficacy scores are related to their level of professional commitment for elementary and middle school (Coladarci, 1992; Milner, Woolfolk Hoy, 2002).

In a study of urban preservice teachers' self-efficacy and the accuracy of assessing their own academic learning, Chen and Bembenuddy (2005) found that preservice teachers who had higher self-efficacy and used time and study environment management strategies exerted more effort than those with lower efficacy. Preservice teachers exerting more effort were also more accurate in assessing their performance capabilities, and subsequently scored higher on their practice tests. In this vein, in the present study, it is attempted to identify what are the factors that mediate the association between teachers' self-efficacy beliefs and their academic performance while they are pursuing an advanced professional certification. There are evidence that self-regulation of homework could serve as a determinant factor that mediate the association between teachers' self efficacy and their academic performance.

Homework Self-Efficacy Beliefs

Bandura (1997) defines *self-efficacy* as "beliefs in one's capabilities to organize and execute the courses of actions required to produce given attainments" (p. 3). However, *homework self-efficacy* is defined as individuals' beliefs in their capabilities to organize and execute the courses of actions required to produce any given assignment or self-initiated academic tasks outside of the classroom to secure successful completion of the academic work. According to Zimmerman (2000), self-efficacy beliefs are task specific with regard to an individual's beliefs that he or she could execute a designated task in a specific area. Many studies have shown that self-efficacy beliefs play a causally influence on learners' ability to self-regulate their learning process (Zimmerman, 2000). Zimmerman (2000) has suggested that self-efficacy plays a significant role in making academic decisions. For example, high self-efficacious teachers who are taking advanced courses may decide to continue working on an important homework assignment when a temptation to stop might arise. By the contrary, teachers with low self-efficacy beliefs may not resist the temptation. Equally important, researchers propose that once students have established academic goals, these goals might increase self-efficacy beliefs (Zimmerman, 2000). In other words, homework self-efficacy should be also related to the teachers' self-regulation of learning.

Because it appears that teachers' homework self-efficacy for academic tasks is a function of their teachers' self-efficacy and it is associated with self-regulation of learning, examining the mediating role of homework self-efficacy is warranted. With regard to teachers, little is know about their beliefs concerning their homework assignments during their teaching preparation training. Self-efficacy beliefs can predict teachers' persistence on tasks, effort put forth on tasks, the level of challenge that they are willing to pursue, and resistance to temptations and distraction (Bandura, 1997).

Bandura (1997) identified four sources of self-efficacy information. First, *enactive learning* is based on authentic mastery experience. In this case, teachers based their judgment of efficacy base don how effectively and frequently they have mastered

similar tasks in the past. Second, *vicarious experience* in which one's efficacy is derived from observing others' successful task completion. Third, *verbal persuasion* refers to others prompt an individual to initiate actions, tasks or behavior. This source of efficacy information is very effective because it assures the individuals that the tasks are feasible, it provides evidence of situational factors and reasons for initiating a particular task. Finally, *physiological state* refers to an individual interpreting his or her somatic symptoms such as stress, anxiety, fear, and fatigue in order to initiate a specific course of action. While pursuing an advanced degree, these four sources of self-efficacy information influence teachers' academic success. For instance, an instructor could assure teachers enrolled in her or his course of their capabilities to exert sufficient effort and to apply effective learning strategies to secure success (Pajares, 1996).

Research Hypotheses

From the theoretical notions and empirical findings discussed above, the researcher derived the following three hypotheses:

- 1) Teachers self-efficacy beliefs, homework self-efficacy, self-regulation, and score on a non-graded practice test would have a direct effect on the teachers' final course grade. Studies have shown that there is a positive association between teachers' self-efficacy and self-regulation and self-regulation and academic performance among preservice teachers (Bembenutty & Chen, 2005; Chen & Bembenutty, 2005). Since there is an association between completion of homework assignments and self-regulation homework, a mediating factor between teachers self-efficacy and self-regulation is expected;
- 2) Teachers' homework self-efficacy and use of self-regulation would mediate the association between teachers self-efficacy and their performance on a non-graded and grade test; and
- 3) Teachers' scores on a non-graded practice test would mediate the association between their homework self-efficacy and use of self-regulation and the actual final grade (see Figure 1).

Method

Participants and Procedure

Participants in this study were 63 secondary education teachers enrolled in a classroom management course required during their graduate educational program at an urban college in New York. Most of students possess provisional teaching certification and were working on obtaining a permanent certification. The administration of the instruments took place during regular instruction in the classroom. In addition to the questionnaires, the students took a non-graded practice test before the actual graded test.

Measures

Non-Graded Practice Test and Graded Final Test. A week before the graded final test, participants answered 25 multiple-choice and five true-false non-graded test questions related to the material covered in the actual graded test. The non-graded test contained questions in the same format and on the same content as the actual graded test ($M = 22.23$; $SD = 2.72$). The grade test consists of 30 multiple-choice and 10 true-false questions ($M = 33.84$; $SD = 3.06$).

Ohio Teacher Sense of Efficacy Scale (OTSES). A week before taking the graded test, participants responded to the 24-item teachers' self-efficacy scale, developed by Tschannen-Moran and Hoy (2001). The OTSES measures teachers' efficacy of student

engagement, instructional strategies, and classroom management. A sample item was: “To what extent can you craft good questions for your students?” The format for all items in the survey was a 9-point scale, ranging from 1 = *nothing* though 9 = *a great deal*. Internal consistency reliability, as estimated by Cronbach alpha, was .95 ($M = 7.34$; $SD = .93$).

Homework Self-efficacy Scale. Teachers also responded to an instrument which assessed their self-efficacy beliefs for successfully learning and completing the tasks assigned to them in the course. A sample item from the academic self-efficacy scale was: “I am sure that I can do the homework assignments for this course.” Rating scale options ranged from 1 = *strongly disagree* to 7 = *strongly agree*. Internal consistency reliability, as estimated by Cronbach alpha, was .81 ($M = 6.42$; $SD = .54$); see Appendix A.

Self-regulation of Learning. To assess the use of self-regulated learning strategies, such as goal-setting, self-monitoring, and self-evaluation in the course in which they were currently enrolled, teachers responded to an academic self-regulation scale (Bembenuddy, 2005). A sample item from this scale was: “How often do you keep a record on how well you are doing in this course in preparation for the final examination?” Rating scale options ranged from 1 = *never* to 7 = *always*. Internal consistency reliability, as estimated by Cronbach alpha, was .90 ($M = 5.10$; $SD = 1.22$); see Appendix A.

Data Analysis

First, Pearson correlational analyses were performed to examine associations among the variables. Second, path analyses were conducted to test the fit of the data to the hypothesized model.

Results

Correlational Analyses

As Table 1 shows, teacher self-efficacy was positively correlated to homework self-efficacy ($r = .34, p < .01$), and self-regulation ($r = .34, p < .01$). Students with higher homework self-efficacy beliefs scores were those who also reported more often using self-regulatory learning strategies ($r = .37, p < .01$) and obtained greater scores on the non-graded practice test ($r = .26, p < .05$). Self-regulation of learning was associated with the non-graded practice test ($r = .41, p < .01$). The non-graded practice test was significantly related to the final graded test ($r = .42, p < .01$).

Path Analyses

Several path analyses were conducted to examine the direct and indirect effects of the variables by using LISREL-8.5 (Joreskog & Sorbom, 2002). The proposed model did not fit the data well ($\chi^2 (0, N = 63) = 0, p < .00$). By following LISREL's modification indexes, a final model fits the data well with a non-significant χ^2 value, $\chi^2 (5, N = 63) = 4.28, p = .60$ (Root Mean Square Error of Approximation (RMSEA) = .00, Goodness of Fit Index (GFI) = .97, Comparative Fit Index (CFI) = 1.00). Figure 2 shows the results of the final model.

The path analysis revealed that teachers self-efficacy has an indirect effect on the non-graded and graded test by its direct effect on homework self-efficacy and self-regulation. Homework self-efficacy has an indirect effect on the non-graded test and on the graded test by its directed effect on self-regulation of learning. Self-regulation has an indirect effect on final grade by its direct effect on the non-graded practice test. The non-

graded practice test has a direct effect on the final graded test. Contrary to the predictions, the results also revealed that teachers' self-efficacy, homework self-efficacy, and self-regulation of learning do not have a direct effect on academic performance (i.e., final grade).

Discussion

The purpose of the present study was to examine how the association between teachers' self-efficacy beliefs and academic performance is mediated by their homework's self-efficacy beliefs and use of self-regulatory learning strategies. The novel findings of this study are as follows. First, the final model revealed that teachers' self-efficacy has an indirect effect on their academic performance. This effect was mediated by the teacher's sense of efficacy belief regarding their capability to initiate and complete their homework assignments and their use of self-regulated learning strategies. Second, the effect of homework self-efficacy beliefs on the teachers' academic performance is mediated by their use of self-regulated learning strategies. Third, taken together, these findings supported the notion that teachers with a greater sense of teaching efficacy reported a high academic sense of homework self-efficacy beliefs, believe that they can master difficult tasks, and displayed high confidence in their capability to do expected tasks throughout the course.

Consistent with Bandura's (1997) social cognitive theory, teachers who had high sense of efficacy beliefs about their capabilities to motivate and communicate well with their students also reported having control of their social and physical environment so that their professional goals (e.g., to become a permanently certified teacher) would be attained. Likewise and concurring with Zimmerman's (2000) master work, teachers with a high sense of efficacy also strategically selected ways to approach learning, as well as set goals and engaged in effective planning, self-monitoring, and self-evaluating of their academic progress.

In the present study, teachers reported their understanding about the importance of controlling their actions, achieving their goals, self-monitoring their academic progress, and evaluating the completion of their tasks in order to attain an advanced teaching certification. For instance, they understood that they needed to transform their motivation into action to remain focused on the execution of an important action that will complete their advanced teacher training. Further, the present findings support the contention that once teacher candidates are enrolled in their advanced programs, they would need to maintain homework self-efficacy beliefs in orders to pursue their career goals.

Educational Implications

Five important educational implications are derived from the present findings. First, the results of the present study highlight the important role that teachers' motivational beliefs and use of self-regulation play on their educational training. In this aspect, Dembo's (2001) proposition that learning to teach is not enough and that future teachers also need to learn how to learn is accentuated.

Second, these findings call for teachers preparation programs to review their programs to see whether their training encompassed the whole myriad of factors that determine successful completion of teaching programs and more importantly, the factors that could empower teachers to deal with the challenges of a teaching career at this

current time when teaching is a challenge. As reported by Milner and Woolfolk Hoy (2002), in the United States, up to 25% of beginning teachers abandon their career before the year. These findings suggest that teacher attrition could be diminished by empowering teachers during their training with high self-efficacy beliefs and self-regulation of learning.

Third, instructors of the teaching programs may consider the four sources of self-efficacy information while training teachers. They could facilitate enactive learning by engaging teachers in authentic mastery experience. Further, instructors could serve as model that teachers could observe and have therefore a vicarious learning experience. Furthermore, instructors could use verbal persuasion, such as “You can do it,” in order to help teachers to believe that they can produce effects through their actions.

Fourth, it is also derived from this study that teachers need to believe that their homework assignments are interesting, challenging, and relating to their career in order for them to experience homework self-efficacy beliefs. Homework assignments that are not related to the teaching career or are presented in a non-interested manner would prevent teachers from target those assignments with high self-efficacy, and therefore, they will not use appropriate and effective self-regulatory strategies in order to complete their tasks.

Fifth, the present findings support the notion that for teaching pursuing advanced professional certification, their self-efficacy beliefs and use of self-regulation of learning matter. Teachers with low self-efficacy beliefs and those who are unable to use effective self-regulatory learning strategies obtained higher grades on the non-practice test as well as on the graded test those students who scored low in those assessments. Thus, instructors of teaching programs may consider encompassing in their training programs not just content area material but tools to enhance teachers’ self-efficacy beliefs and self-regulation of learning.

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Table 1. Descriptive Statistics, Cronbach Alphas, and Pearson Correlations between Motivational Beliefs, Self-regulation, and Performance

Correlations					
Variables	1	2	3	4	5
Teachers Self-Efficacy	----				
Homework Self-efficacy	.34**	----			
Self-regulation	.34**	.37**	----		
Practice Non-graded Test	.14	.26*	.41**	----	
Final Graded Test	.15	.23	.09	.42**	----
Cronbach α	.95	.81	.90	----	----
<i>M</i>	7.34	6.42	5.10	22.23	33.84
<i>SD</i>	.93	.54	1.22	2.72	3.06

Figure 1: Hypothesized Model

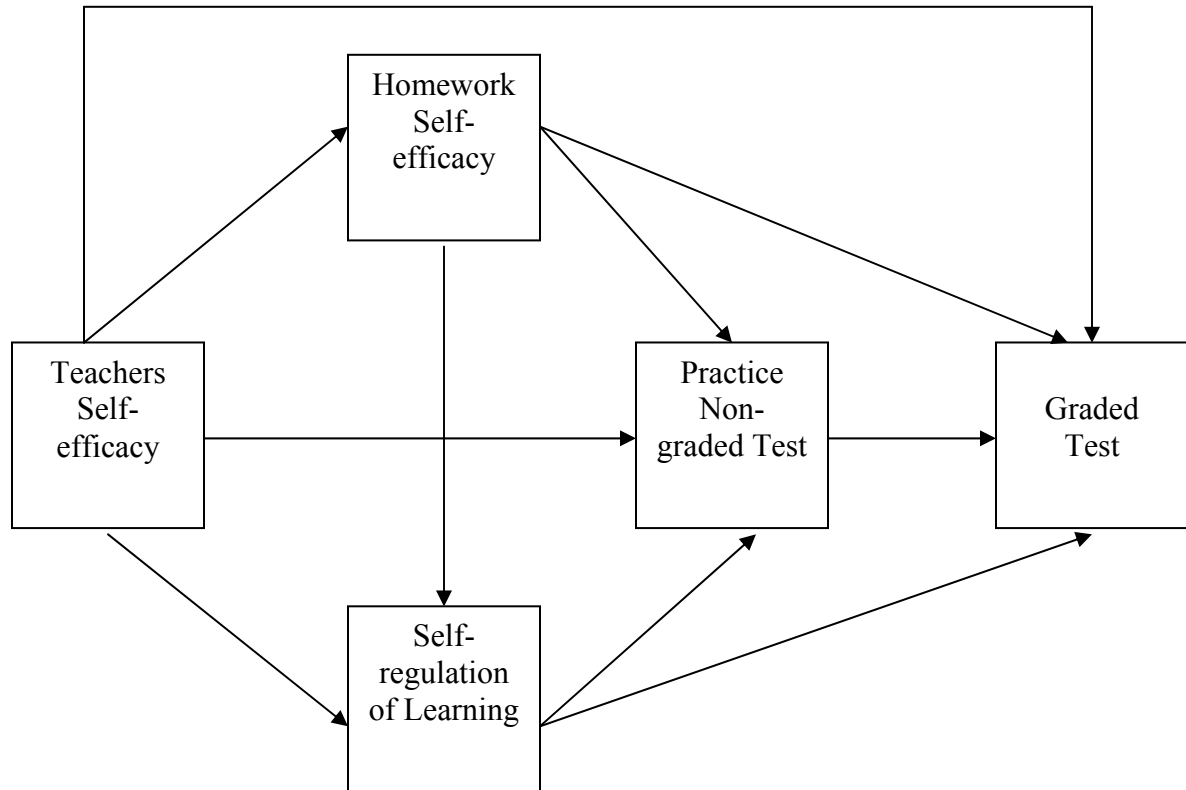
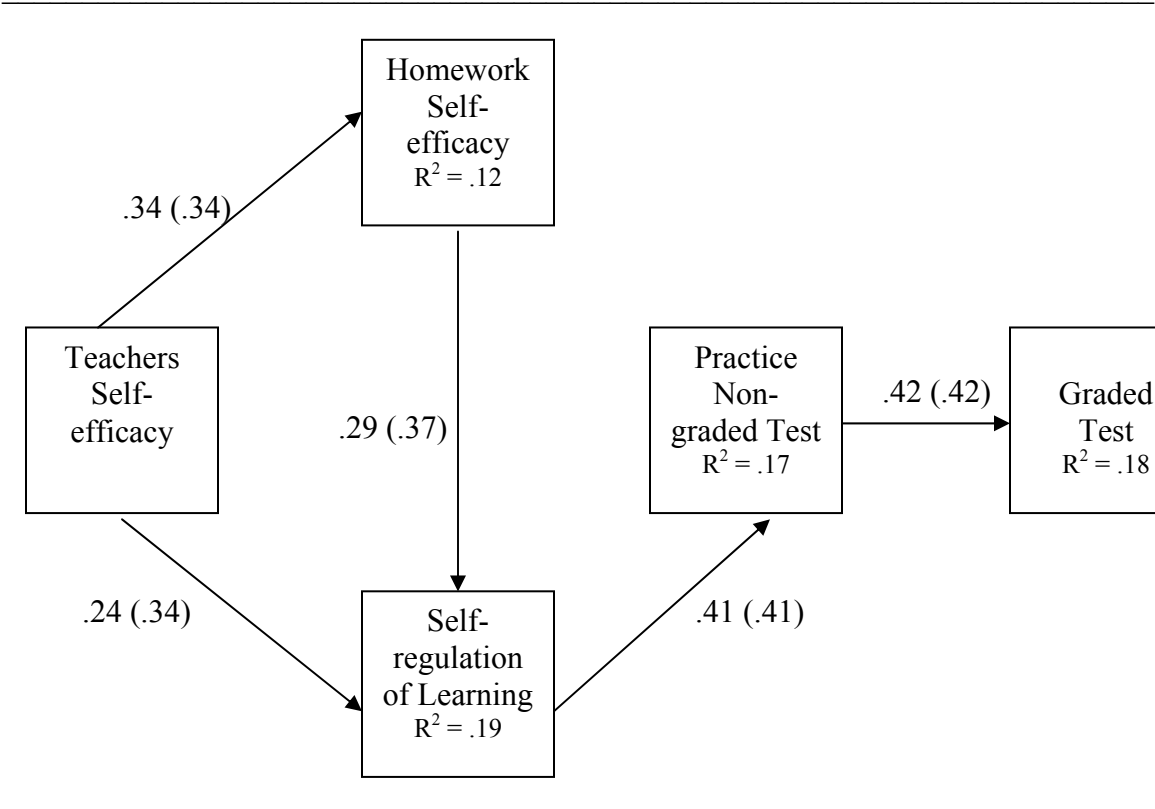


Figure 2: Final Model



Chi-square = 4.28, p-value = .60, RMSEA = .00; Goodness of Fit Index (GFI) = .97, Comparative Fit Index (CFI) = 1.00,

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Appendix A

HOMEWORK SELF-EFFICACY BELIEFS

1. I am confident that I can successfully complete the homework for this class.
2. I am sure I can master the material contained in the homework for this class.
3. I can do the homework for this class.
4. I believe that I have the skills to complete the homework for this class.
5. I believe that I can learn the material included in the homework.
6. If I have problem with my homework, I can ask the instructor for assistance.
7. If I have problem with my homework, I can find ways to understand it.

HOMEWORK SELF-REGULATION

8. I check my homework as I go along.
9. While doing my homework, I take a break from my work when I get frustrated.
10. I make sure I understand one part before I go on to the next part of the homework.
11. I find ways to do my homework fun.
12. I review my homework for errors.
13. I keep going when I get stuck with my homework.
14. I keep working on my homework even when I do not feel like it.
15. I keep a record of my homework completed.
16. 16. I set goals before start working n my homework.
17. 17. I monitor my progress as I am working on the homework.

Rating scale options ranged from 1 = *Strongly Disagree* to 7 = *Strongly Agree*.